



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/923,263

08/03/2001

Stephen G. Dick

I-2-166.1US

2525

24374

7590

12/23/2005

VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER

CHANG, RICHARD

ART UNIT

PAPER NUMBER

2663

DATE MAILED: 12/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/923,263

Applicant(s)

DICK ET AL.

Examiner

Richard Chang

Art Unit

2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01/16/2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's arguments and amendments, on 09/30/2005, with respect to claims 1-38 have been fully considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent No. 6,363,060 ("Sarkar") in view of the prior art of the background.

Regarding claims 1, 5, 12, 17, 21 and 26, Sarkar teaches a method and apparatus for cell search related quickly acquiring synchronization of a signal in a WCDMA communication system (method for User equipment capable of conducting cell search in a wireless communication system) (see background teaching below) comprising of:

a receiver (204) for receiving the primary synchronization code PSCs (See Fig. 6, Col. 13, lines 45-49),

a PSC detector (206, See Fig. 6, signal power measuring device) for measuring the correlation energy (power level) of received PSCs and identifying a frame timing of received PSCs by offset with the greatest correlation energy (which exceed a power threshold) (See Fig. 4, Col. 14, lines 27-48), and

a processor (See Fig. 4, step 106, 110, 116) as PSC detector (206) for analyzing data signals received in the primary synchronization channel associated with the PSC with highest power level (greatest correlation energy) of the received PSCs with a threshold exceeding power level (6dB predetermined threshold over other correlation energy) and identifying frame timing (synchronizing or maintaining synchronization) with the base station associated with said highest PSC (See Fig. 4, Col. 10, lines 27-48), wherein said data signals including secondary synchronization codes (SSC) detector (208, See Fig. 6, Col. 15, lines 3-11).

Sarkar teaches substantially all the claimed invention but did not disclose expressly the particular application involving background and limitations of

“a plurality of base stations which each transmit a common primary synchronization code in a primary synchronization channel at a different timing (time slot) within a system frame and a broadcast common data in a broadcast channel” and

“a transmitted power level of the PSC and the midamble code being at a common fixed ratio for each of said base stations”.

The prior art in the background teaches that each of base stations transmits a common primary synchronization code (block 1) in a primary synchronization channel and a midamble code (broadcast common data) in a broadcast channel (See Fig. 1, Col. 1, line 62 to Col. 2, line 3), at a different timing (time slot) within a 10ms system frame (See Fig. 2, Col. 1, line 24-35) and a transmitted power level of the PSC and the midamble code being at a common fixed ratio (PSC is at -3dB power level with respect to BCH as fixed ratio, see Col. 1, line 55-58) for each of said base stations.

A person of ordinary skill in the art would have been motivated to employ the prior art of the background in Sarkar in order to obtain a method and apparatus for cell search related quickly acquiring synchronization of a signal in a WCDMA communication system and to take advantage of a plurality of base stations which each transmits a common PSC in a primary synchronization channel at a different time slot within a system frame and a broadcast common data in a broadcast channel and a transmitted power level of the PSC and the midamble code being at a common fixed ratio for each of said base stations in claims 1, 5, 12, 17, 21 and 26.

The suggestion/motivation to do so would have been to have a plurality of base stations which each transmit a common PSC in a primary synchronization channel at a different time slot within a system frame and a broadcast common data in a broadcast channel and a transmitted power level of the PSC and the midamble code being at a common fixed ratio for each of said base stations, as suggested by prior art of the background in Col. 1, line 55-58. At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine prior art of the background with the Sarkar to obtain the inventions specified in claims 1, 5, 12, 17, 21 and 26.

Regarding claims 2, 6, 9, 13, 18-19, 22, 27 and 31, as discussed above, this claim has limitation that is similar to those of claims 1, 5, 12, 17, 21 and 26 and Sarkar further teaches that said signal power measuring device comprises:

a matched filter (310) matched to the common PSC for measuring each PSC received from said plurality of base stations (See Fig. 7, Col. 14, lines 48-49),

an autocorrelation envelope (noise estimator) which determines the autocorrelation energy (noise power) received from each transmission of said plurality of base stations, and

a slot timing decision module (314 as comparator) for determining the predetermined threshold energy (a power threshold) and comparing the correlated energy (said measured power levels) of said received PSC with said threshold and outputting the frame timing of said highest PSC (See Fig. 7, Col. 15, lines 12-17), thus it is rejected with the same rationale applied against claims 1, 5, 12, 17, 21 and 26 above.

Regarding claims 3, 7, 10, 14-15, 23-24, 28-29 and 32-33, as discussed above, this claim has limitation that is similar to those of claims 2, 6, 9, 13, 18, 22, 27 and 31 and Sarkar further teaches that said processor comprises:

a SSC processor (212 and 208) responsive to said frame timing output from said signal power measuring device which detects said secondary synchronization codes (SSC) in said primary synchronization channel to identify the base station associated with the frame timing to extract base station information which includes the pilot information (midamble codes), and

a pilot detector (synchronization processor) responsive to said SSC processor which detects a primary pilot information (scrambling code for midamble) (See Fig. 6, Col. 13, lines 40-53), thus it is rejected with the same rationale applied against claims 2, 6, 9, 13, 18, 22, 27 and 31 above.

Regarding claims 4, 8, 11, 16, 20, 25, 30 and 34, as discussed above,

Sarkar teaches substantially all the claimed invention but did not disclose expressly the particular application involving limitations of the parameters of 3rd generation wideband CDMA operation.

The prior art of the background further teaches that the base station is of the 3rd generation wideband CDMA operation, for supporting high speed data bandwidth, the 3rd generation wideband CDMA database inherently stores more information which includes a time offset, frame index number, time slot of the transmitted PSC, received power, and time of arrival relative to the UE (See Col. 1, lines 24-34).

A person of ordinary skill in the art would have been motivated to employ the prior art of the background in Sarkar in order to obtain a method and apparatus for cell search related quickly acquiring synchronization of a signal in a WCDMA and to take advantage of the parameters of 3rd generation wideband CDMA operation in claims 4, 8, 11, 16, 20, 25, 30 and 34.

The suggestion/motivation to do so would have been to store in the database the parameters of 3rd generation wideband CDMA operation, as suggested by prior art of the background in Col. 1, lines 24-34. At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine prior art of the background with the Sarkar to obtain the inventions specified in claims 4, 8, 11, 16, 20, 25, 30 and 34.

4. Claims 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent No. 6,363,060 ("Sarkar") in view of US patent No. 6,246,673 ("Tiedemann et al.").

Regarding Claim 35, Sarkar further teaches that the UE extracts the identified base station information including a time offset and time slot of the identified base stations (See Fig. 5, step 156, Col. 11, lines 29-34).

Sarkar teaches substantially all the claimed invention but did not disclose expressly the particular application involving limitations of

“calculating a time of arrival (TOA) for each of said adjusted PSC's frame timing; and adjusting a timing of said base station in response to said TOAs”.

Tiedemann et al. teach a method and system for handoff between an asynchronous CDMA base station and a synchronous CDMA base station for estimating (calculating) a arrival time (time of arrival, TOA) for each of said adjusted PSC's frame timing and deskewing (adjusting) a timing of said base station in response to said TOAs (See Fig. 3, Col. 11, lines 12-29).

A person of ordinary skill in the art would have been motivated to employ Tiedemann et al. in Sarkar in order to obtain a user equipment (UE) and method capable of conducting cell search in a wireless communication system and to take advantage of calculating a time of arrival (TOA) for each of said adjusted PSC's frame timing and adjusting a timing of said base station in response to said TOAs in claim 35.

The suggestion/motivation to do so would have been to estimate an arrival time for each of said adjusted PSC's frame timing and to adjust a timing of said base station in response to said arrival time (See Fig. 3, Col. 11, lines 12-29). At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the

art to which the invention pertains to combine Tiedemann et al. with Sarkar to obtain the inventions specified in claim 35.

Regarding claim 36, this claim has limitation that is similar to those of claim 35 and Sarkar further teaches that the SSC detection in the Primary Synchronization channel involves the best guess validity test (see Col. 5, lines 65-68), thus it is rejected with the same rationale applied against claim 35 above.

Regarding claim 37, as discussed above, Tiedemann et al. further teach that generating relative timing error between two base stations (Delta T between BTS1 and BTS2 as time distance of arrival for each of said identified base stations) (see Fig. 4, Col. 11, lines 37-44).

A person of ordinary skill in the art would have been motivated to employ Tiedemann et al. in Sarkar in order to obtain a user equipment (UE) and method capable of conducting cell search in a wireless communication system and to take advantage of generating relative timing error between two base stations in claim 37.

The suggestion/motivation to do so would have been to generating relative timing error between two base stations, See Fig. 4, Col. 11, lines 37-44. At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine Tiedemann et al. with Sarkar to obtain the inventions specified in claim 37.

Regarding claim 38, this claim has limitation that is similar to those of claims 1 and 37 for a common fixed ratio of transmitted power level of the midamble and PSC, thus it is rejected with the same rationale applied against claims 1 and 37 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chang whose telephone number is (571) 272-3129. The examiner can normally be reached on Monday - Friday from 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RKC
rkc

Richard Chang
Patent Examiner
Art Unit 2663

12/21/05
DERRICK FERRIS
PATENT EXAMINER